

REMARKS

Claims 17-40 are currently pending.

Objection and Specification

The specification has been amended to add a Brief Description of the Several Views of the Drawing section. No new matter has been added. Entry of the Amendment and withdrawal of the Examiner's objection is respectfully requested.

§ 103

Claims 17-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tadamitsu (JP 03-170445, English Translation).

Tadamitsu does not suggest each feature of the presently claimed invention, as set forth in representative claim 17. For example, Tadamitsu does not teach or suggest a step where a gaseous mixture devoid of molecular oxygen and comprising propane, water vapour, as well as, if appropriate, an inert gas, is introduced into a first reactor with a moving catalyst bed. Moreover, Tadamitsu does not teach or suggest using two reactors.

In clear contrast to the presently claimed invention, Tadamitsu teaches a method for the preparation of acrolein and acrylic acid from propane that uses free oxygen. See, for example, Tadamitsu at page 6, lines 18-20 ("The goal of this invention is to provide a manufacturing method for acrolein and acrylic acid that is very effective by oxidizing propane using free oxygen (gas containing oxygen).")

The method of preparation of Tadamitsu relies on a means of making a gaseous phase oxidation of propane using a catalyst in an oxidized form. The amount of oxygen within the supply gas is controlled so that the amount is less than the stoichiometric amount with respect to the propene to be converted. See Tadamitsu at page 9, lines 1-4.

Accordingly, Tadamitsu relies on a process that requires some oxygen. One skilled in the art would not be motivated to modify the process of Tadamitsu to arrive at the presently claimed invention.

The process of the presently claimed invention provides advantages by being devoid of molecular oxygen that are not contemplated by Tadamitsu. For example, the presently claimed invention limits the over-oxidation of products formed during

the reaction, which would normally take place in the presence of molecular oxygen. The process in the absence of molecular oxygen results in a reduced formation of carbon monoxide and carbon dioxide, and in a reduced formation of degradation products. This allows an increase in the acrylic acid selectivity.

Moreover, Tadamitsu does not suggest the presently claimed second reactor. Tadamitsu merely suggest recycling the separated, unreacted, process gases through the same reactor. That is, before the recycle step, the formed acrolein and acrylic acid are separated from the unreacted process gases. Then, only the unreacted process gases are recycled into the same reactor. The addition of a second reactor is quite different from the recycling step of Tadamitsu. In the presently claimed invention, the process gases, including the formed acrylic acid are sent to the second invention. It is surprising that the acrylic acid coming from the first reactor is not degraded in the second reactor. The use of a second reactor with an appropriate catalyst and no addition of oxygen allows for a better conversion of propane and an improved selectivity in acrylic acid.

Accordingly, the rejection of claims 17-25 under 35 U.S.C. § 103(a) as being unpatentable over Tadamitsu should be withdrawn.

Claims 26-29 and 37-39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tadamitsu (JP 03-170445, English Translation) in view of Dubois (EP 1 238 960).

The Examiner has improperly interpreted Tadamitsu as teaching a process that is devoid of molecular oxygen. As discussed above, Tadamitsu clearly teaches process that relies on molecular oxygen. Accordingly, Dubois cannot properly be combined with Tadamitsu in manner to arrive at the presently claimed invention.

Accordingly, the rejection of claims 26-29 and 37-39 under 35 U.S.C. § 103(a) as being unpatentable over Tadamitsu in view of Dubois should be withdrawn.

Conclusion

A prompt and favorable review of the present application along with an indication that the application is in condition for allowance is earnestly solicited. Should any questions arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues, the Examiner is invited to call the undersigned at the number below.

Respectfully submitted,
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